CLAIMS:

1. A synthetic peptide selected from the group consisting of:

(i) a peptide of at least 12 and at most 30 amino acid residues based on a complementarity-determining region (CDR) of the heavy or light chain of a pathogenic anti-DNA monoclonal antibody that induces a systemic lupus erythematosus (SLE)-like disease in mice (hereinafter CDR-based peptide), a salt or a chemical derivative thereof;

(ii) an analog of a CDR-based peptide defined in (i), a salt or a chemical derivative thereof;

(iii) a dual synthetic peptide comprising two such peptides of (i) or analogs of (ii) covalently linked to one another either directly or through a short linking chain;

(iv) a peptide polymer comprising a plurality of sequences of said peptide (i) or analog thereof (ii); and

(v) a peptide polymer (iv) attached to a macromolecular carrier.

2. A synthetic peptide according to claim 1, capable of:

(i) inhibiting specifically the proliferative response and cytokine secretion of T lymphocytes of mice that are high responders to SLE-inducing autoantibodies; or

(ii) inhibiting development of SLE in mice that are susceptible to SLE-induction by pathogenic autoantibodies.

3. A synthetic peptide according to claim 1 or 2, being selected from the group consisting of peptides having the sequences I to V herein, wherein:

(i) the peptide of sequence I has the formula:

T G Y Y X_1 X_2 X_3 X_4 X_5 Q S P E K S L E W I G [I]

wherein X_1 is Met, Ala or Val; X_2 is Gln, Asp, Glu or Arg; X_3 is Trp or Ala; X_4 is Val or Ser; and X_5 is Lys, Glu or Ala;

(ii) the peptide of sequence II has the formula:

E I N P S T G G X_6 X_7 X_8 X_9 X_{10} X_{11} X_{12} K A K A T [II]

wherein X_6 and X_7 are each Thr, Val or Ala; X_8 is Tyr or Phe; X_9 is Asn or Asp; X_{10} is Gln or Glu; and X_{11} is Lys or Glu, and X_{12} is Phe or Tyr;

(iii) the peptide of sequence III has the formula:

Y Y C A R X_{13} X_{14} X_{15} X_{16} P Y A X_{17} X_{18} Y W G Q G S [III]

wherein X_{13} is Phe, Thr or Gly; X_{14} is Leu, Ala or Ser; X_{15} is Trp or Ala; X_{16} is Glu or Lys; X_{17} is Met or Ala, and X_{18} is Asp, Lys or Ser;

(iv) the peptide of sequence IV has the formula:

G Y N X_{19} X_{20} X_{21} X_{22} X_{23} X_{24} S H G X_{25} X_{26} L E W I G [IV]

wherein X_{19} is Met or Ala; X_{20} is Asn, Asp or Arg; X_{21} is Trp or Ala; X_{22} is Val or Ser; X_{23} is Lys or Glu; X_{24} is Gln or Ala; X_{25} is Lys or Glu, and X_{26} is Ser or Ala; and

(v) the peptide of sequence V has the formula:

Y Y C A R X_{27} X_{28} X_{29} Y G X_{30} X_{31} X_{32} G Q G T L [V]

wherein X_{27} is Ser or Phe; X_{28} is Gly or Ala; X_{29} is Arg, Ala or Glu; X_{30} is Asn or Asp; X_{31} is Tyr or Phe, and X_{32} is Trp, His or Ala.

4. A peptide according to claim 3, having a sequence Ia of the formula:

T G Y Y M Q W V K Q S P E K S L E W I G (Ia)

5. A peptide according to claim 3, having a sequence IIa of the formula:

E I N P S T G G T T Y N Q K F K A K A T (IIa)

6. A peptide according to claim 3, having a sequence IIIa of the formula:

Y Y C A R F L W E P Y A M D Y W G Q G S (IIIa)

7. A peptide according to claim 3, having a sequence IVa of the formula:

G Y N M N W V K Q S H G K S L E W I G (IVa)

8. A peptide according to claim 3, having a sequence Va of the formula:

Y Y C A R S G R Y G N Y W G Q T L (Va)

9. A dual synthetic peptide according to claim 1 or 2, in which two different sequences I to V in claim 3 are covalently linked to one another either directly or through a short linking chain.

10. A dual synthetic peptide according to claim 9, in which two different sequences of the peptides Ia to Va are linked covalently.

11. A peptide polymer according to claim 1, containing a plurality of identical sequences selected from the sequences I to V in claim 3.

12. A pharmaceutical composition for the treatment of systemic lupus erythematosus comprising an effective amount of a synthetic peptide or peptide polymer according to any one of claims 1 to 11, and a pharmaceutically acceptable carrier.

13. A pharmaceutical composition for the treatment of systemic lupus erythematosus comprising an effective amount of a mixture of at least two different peptides in accordance with any one of the claims 3 to 10.

14. A method for the treatment of systemic lupus erythematosus comprising administering to a systemic lupus erythematosus patient an effective amount of a peptide or peptide polymer according to any one of claims 1 to 11.

15. A method of selecting peptides capable of inhibiting the proliferative response of T lymphocytes from a SLE patient, comprising:

(i) synthesizing a peptide of at least 12 and at most 30 amino acid residues, having a sequence based on the CDR region of the heavy or light chain of a pathogenic anti-DNA monoclonal antibody that induces a SLE-like disease in mice, or an analog thereof;

(ii) testing said peptide or analog for its ability to inhibit the proliferative response of T cells from a SLE patient, or a T cell line or clone which is specific to the 16/6 Id anti-DNA monoclonal antibody to which the T cells are specific; and

(iii) selecting and producing said peptide only if it is capable of inhibiting said proliferative response.